

Morgan Hill Fire Protection and Emergency Medical Master Plan

Scenario	Description	Staffing Level/Day	Advantages	Disadvantages
4	Provide additional staffing level of one person/day at South County Station. Enhance staffing to 5 at 12's and 4 Person staffing at 13's.	12	<ul style="list-style-type: none"> Provides small measure of staffing for Truck company. Provides Flexibility for alternative deployment models at Station 13. 2-In/2-Out Coverage substantial with the exception of areas on South end of City. 	<ul style="list-style-type: none"> Expense South end of City somewhat deficient to remainder relative to 2-In/2-Out.
5	5 Mini-Station Locations. Each with 2-Person Companies. Locations are portrayed in attached exhibit	10	<ul style="list-style-type: none"> Close to existing staffing levels First Responder Travel times throughout vast majority of City is 5 minutes or less. 2-In/2-Out coverage to approx. 85% of 4-person coverage models. 	<ul style="list-style-type: none"> Capital expense of relocating Probable reduction in pumping capacity owing to likely alternative apparatus. Truck company services not addressed. Because of two bullet points above, larger impact on built in protection more likely. Greater 5-minute travel time may be sufficient economic trade-off given Measure P impacts. Expense
6	Additional 3-Person Engine and additional Station. Locate near middle of city to provide staffing enhancement throughout and additional ALS Capacity. Maintain staffing levels at other stations.	12	<ul style="list-style-type: none"> Close to existing staffing levels Provides 2-In/2-Out to approximately 85%+ of City. Provides additional ALS Capacity Marginal Expense enhancement Mitigation to travel time increases owing to increasing congestion. 	<ul style="list-style-type: none"> Staffing of Truck Services Problematic (however, enhanced over existing system). Expense Provides response time in excess of 8-minute plus to small areas on periphery of City.

Scenario	Description	Staffing Level/Day	Advantages	Disadvantages
7	Additional 4-Person Engine and additional Station. Locate near middle of city to provide staffing enhancement throughout City and additional ALS Capacity. Increase staffing levels at other stations to 4 people.	16	<ul style="list-style-type: none"> Provides 2-In/2-Out to approximately 96%+ of City. Provides additional ALS Capacity Provides solution to potential minimum staffing mandates Provides resources to provide ancillary services to southwestern area of city. Mitigation to travel time increases owing to increasing congestion. Provides incremental solution to increasing demand for aerial devices and truck company services 	<ul style="list-style-type: none"> Expense

Estimated Cost Implications of Presented Scenarios

Exhibit 2-3
Cost Implications of Staffing Models
City of Morgan Hill

Scenario ¹⁵	Staffing Enhancement Needed		Estimated Annual Cost (Present Dollars)
	On-Duty	Total Personnel	
Scenario 1 - Existing Infrastructure. Change in Staffing to 4-Person Companies (i.e. 4 persons at each station)	4	12	\$1,390,744
Scenario 2 - Relocation and Addition of Stations. Station 12 to the vicinity of 650 Llagas Station 13 to the vicinity of 3000 East Dunne New Station in the vicinity of Half Street. All Stations are modeled at 3 person companies	4	12	\$1,390,744 + significant capital costs
Scenario 3 - Enhanced staffing to existing infrastructure to include 5 People at Station 12 (Engine Staffed with 3/Truck with 2) 5 People at station 13 (Engine staffed with 3 and Patrol or Rescue with 2) and 4 people staffed at South County Station.	6	18	\$2,152,910
Scenario 4 - Enhance to 3 person Staffing at South County. Enhance staffing to 5 at 12's (Engine 3/Truck 2) and 4 person staffing at 13's.	4	12	\$1,390,744

¹⁵ All scenarios assume increase in staffing of South County Station from a baseline of 2-Persons/shift.

Scenario ¹⁶	Staffing Enhancement Needed	Estimated Annual Cost (Present Dollars)
Scenario 5 - 5 Mini-Station Locations. Each with 2-Person Companies. Locations are portrayed in attached exhibit	2	\$695,372 + significant capital costs
Scenario 6 - Additional station near middle of city to provide staffing enhancement throughout and additional ALS Capacity.	4	\$1,390,744 + significant capital costs
Scenario 7 - Additional station near middle of city staffed with 4. Increase staffing to 4 persons/company. Utilize Quint as Engine 12.	8	\$2,369,372 + significant capital costs

¹⁶ All scenarios assume increase in staffing of South County Station from a baseline of 2-Persons/shift.

The entity that ultimately provides fire and EMS services to Morgan Hill should seek to enhance cooperative, regional efforts at providing service delivery.

As it relates to Fire Protection, the south county area (roughly defined as the Cities of Morgan Hill and Gilroy and the South County Fire Protection District) is relatively isolated. Currently, the Santa Clara County Fire Department augments second and greater alarm units into Morgan Hill from the communities of Los Gatos and Cupertino. Greater alarm assignments are dependent upon the resources of neighboring communities. Response times for truck companies and additional engines can easily amount to 20 to 30 minutes.

Of the three fire protection agencies above, both the South County Fire Protection District and the City of Morgan Hill receive the benefit of “ancillary services” that can best be provided, from an economic efficiency perspective, by a large regional or sub-regional agency. The City of Morgan Hill current receives benefit of services that are able to be provided because of the scale of the size of the Santa Clara County Fire Department. Likewise, the South County Fire Protection District receives the potential benefit of these types of services through their contract service provider, the California Department of Forestry and Fire Protection. The services under discussion are summarized below and are detailed on pages 41 - 45 of this report:

- Hazardous Materials Management and Response
- Fire Prevention Inspections
- Public Education
- Development Review and Enforcement
- Fire Investigations
- Juvenile Fire Setter Counseling Program
- Communications and Dispatch Services
- Fleet Maintenance
- Facilities Maintenance
- Administrative Support Functions including Human Resource Management
- Training and Human Resource Development
- Supplemental Flex Staffing during high hazard fire days

While it would be possible to replicate these services on a local basis, the cost components alone would make this a less than optimal option. Aside from the financial

implications, it is unlikely, given the demand for services projected within the service area, that skills maintenance or full capacity utilization could be achieved with a service area limited to the boundaries of the City of Morgan Hill.

Therefore, it is most likely, that in order to maintain the current levels of service for the service tasks described above, that Morgan Hill will remain in some form of regional service delivery.

The account of issues described above, is equally true for the South County Fire Protection District and the City of Gilroy. Service levels for all areas can ultimately be enhanced by improvements in the communications/dispatch infrastructure that will provide seamless dispatch.

Communication Infrastructure

One of the most critical elements in maximizing the effectiveness of a fire protection infrastructure is maximizing the efficiency of the communication infrastructure that serves it.

By “communication infrastructure” this plan refers to the equipment and processes necessary to receive and process a call for assistance, to dispatch appropriate equipment and the provision of communication links that provide for emergency scene operations and safety.

Currently, the three agencies that comprise the south county area (City of Morgan Hill, City of Gilroy and the South County Fire Protection District) operate on 4 distinct dispatch and communications platforms¹⁷. The City of Morgan Hill (i.e. Santa Clara County Fire Department) is dispatched and maintains their communications infrastructure through Santa Clara County Communications. South County Fire Protection District maintains their dispatch capability and communications infrastructure through the California Department of Forestry and the City of Gilroy maintains a proprietary system owned and operated by the City of Gilroy through it's Police Department.

The integration of this communication network would vastly improve the delivery of service to the citizens of Morgan Hill. There are several options with respect to this

¹⁷ These include County Communications, Gilroy PSAP, CDFFP SPSAP, and the Morgan Hill PSAP staffed by the Police Department.

integration. If the ultimate system is served by a single provider, the integration of the communication infrastructure should be a key element in that contract. It is estimated that on a cost sharing basis, the pro rata share of communications services provided to Morgan Hill through the Santa Clara County Fire Department is \$120,000. While a complete cost analysis of an independent communications center was not undertaken, the scope of the dollar amount involved clearly indicates that the City could not provide this function for less money. Even if the existing City 911 infrastructure were utilized, the same service provided by County Communications (i.e. dedicated monitoring of fire ground frequencies and full-time pre-arrival or EMD instructions) would require substantial additional staffing. This cost alone would easily exceed the marginal cost of providing these services on a larger scale basis and does not include capital investment for dispatch stations, supervisor training or EMD dispatch training or certification.

While it is impossible to measure directly given the current system, an enhancement in current service levels could be achieved by the direct dispatch of South County Units as an integral part of the Morgan Hill Fire Defense system. As described above, when a call is received by County Communications and the appropriate unit to dispatch is the South County Fire District engine, the dispatch goes directly to the Unit Headquarters of the California Department of Forestry and Fire Protection. The call is then re-dispatched within the CDF system to the engine and crews who respond. Even if the call is “re-dispatched” in the most efficient manner possible, there is an added delay in the response of the South County Fire District Unit. An integrated system of dispatch and unit status that provided for direct dispatch of the South County unit and awareness on the part of County Communications relative to the availability and status of the South County unit will enhance response time performance to approximately 20% of the calls within the City of Morgan Hill.

Shared Incident Command Responsibilities (Battalion Chief Level)

Shift commander and incident command responsibilities are currently the responsibility of a Battalion Chief assigned to the Morgan Hill community. This position is primarily responsible for contract administration, management and liaison with the City. This position currently works a standard 40-hour work week. During “normal

working hours” this Battalion Chief can assume responsibility for incident command and supervision. If he/she is not available, these duties are handled by the next closest Battalion Chief from the Santa Clara County Fire Department. During nights, weekends and holidays, this incident command capability is provided by the same on-duty Battalion Chief position. The South County Fire Department (California Department of Forestry and Fire Protection) utilizes a similar system of on-call Battalion Chief level supervision during “off” times, as does the City of Gilroy.

This system has resulted in a largely redundant capacity for Battalion Chief coverage in the South County region. Given an integrated communication structure identified above, this degree of redundancy could be reduced resulting in theoretical cost savings to the overall system. The actual amount of cost savings is somewhat debatable as the multi-task responsibilities of the current position would still necessitate staffing to some degree. By way of example, in Morgan Hill, the Battalion Chief utilized as the primary incident command resource is also responsible for contract administration and management. This function would still be necessary in the presence of a cooperative agreement for incident command coverage. It is likely that South County Fire and Gilroy could make similar claims. While there may not be obvious and direct cost savings from this type of regional cooperation, it is projected that the maintenance of an on-duty, Battalion Chief level presence, 24-hours a day could be justified if the larger south county region was being served. As the capacity currently exists, there should be no additional cost, while the level of service and safety would be measurably increased by 24-hour/day Battalion Chief level supervision.

The need for Truck Company and related rescue services will increase during the planning period. Delivery of Truck Resources should be guaranteed.

During the planning horizon, it is estimated that the City of Morgan Hill will add up to 2.5 million square feet of commercial and industrial property within it’s boundary. Much of this development will be large span, large square footage industrial development. While much of this development will be in the central-western area of the

City in an area approximating the current industrial and business parks, there is also substantial development forecast for the southern area of the City as well. This intensity of development when combined with increasing demands caused by increasing densities and transportation infrastructure strains will likely enhance the need for rescue and extrication capabilities within the City.

Additionally, if a regional approach is to be adopted in the South County area. A large area of commercial/industrial development such as found in central/west Morgan Hill is a logical location for the needed services of a Truck Company. This would allow for reasonable access to Highway 101 for transit south into the potential regional delivery area, while maintaining a presence near a high demand area for Truck Services such as the Industrial Park area.

Defining triggering needs for Truck company services is not an exact science. Several metrics are utilized in helping formulate the overall policy decision about Truck Company deployment: ISO Grading Criteria, unit utilization and existing community standards for coverage.

ISO Grading Criteria

This rating is utilized by the Insurance Industry as one of the mechanisms involved in determining the relative risk of a property under consideration for insurance underwriting, and thus the relative rates of insurance premiums.

The ISO Fire Suppression Rating mechanism is not intended to be utilized as a design mechanism for municipal fire defense systems. However, it does possess a certain degree of practical implication on the community costs involved in providing fire protection services. Currently, Morgan Hill enjoys a Class 4 rating, based upon an evaluation conducted in 1992.

It is extremely important to note that **the Fire Suppression Rating Schedule is but one tool** utilized by the insurance industry to evaluate risk and set premiums. Large commercial/industrial buildings are almost universally ranked independently today and do not impact the community's Fire Suppression Rating Schedule. However, the community's rating is a factor in the rating of these large buildings.

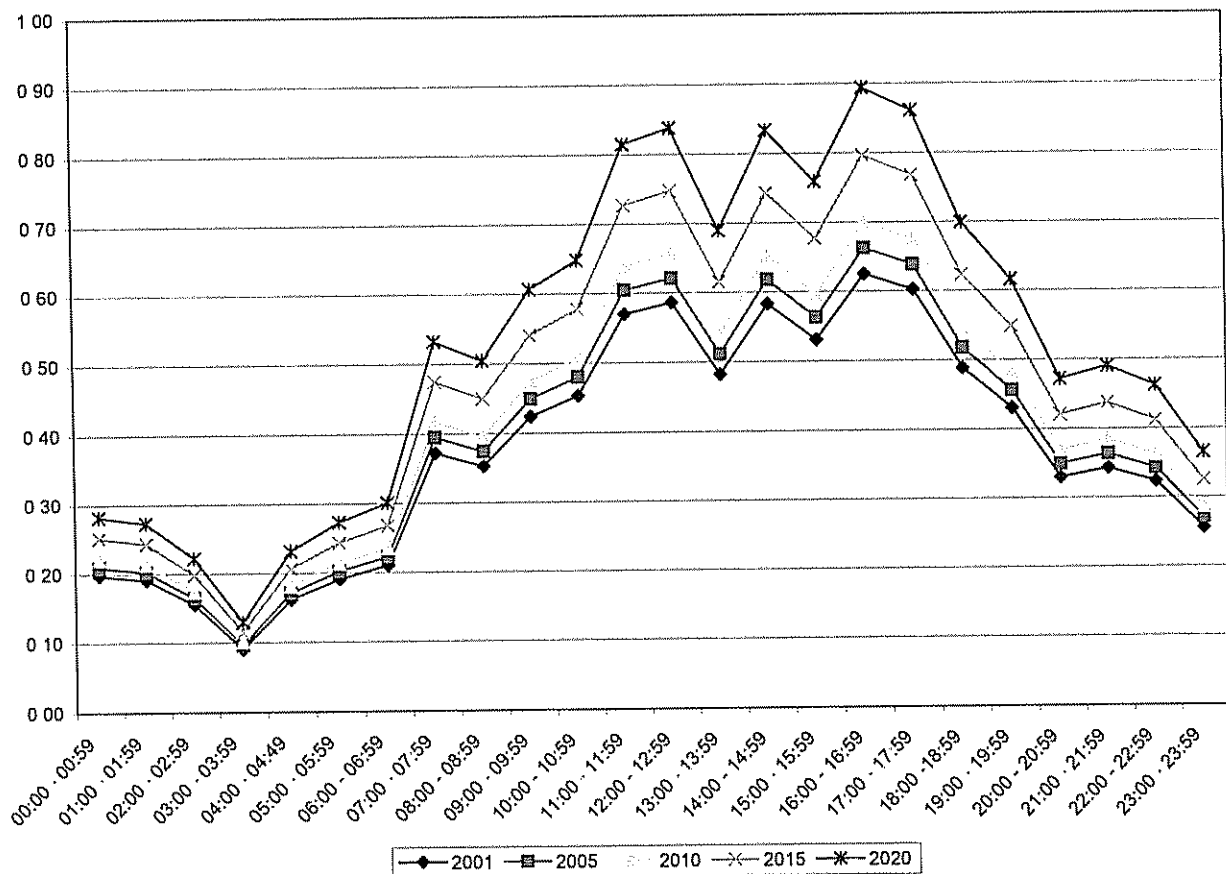
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The Insurance Services Office gives maximum credit for Truck Company coverage when all built upon areas in the City with a building 3 or more stories in height and/or a needed fire flow in excess of 3,500 gpm are within 2.5 miles of a fire station staffed with a Truck Company. Under a strict interpretation of this, the City is currently in need of Truck Company services. Partial credit is received as the Santa Clara County Fire Department currently operates a Truck Company from the El Toro Station (Station 12). However, this equipment is cross staffed with other apparatus and not available as a stand alone resource.

Resource Utilization and System Demand

As described earlier in this plan, the El Toro Station (Station 12) responds to approximately 60% of the calls for service within the City of Morgan Hill. The geographic area that this station covers also has within it a large portion of the commercial/industrial development described earlier. One of the decision criteria in the implementation and/or establishment of Truck Company services is the impact that the new company can have in the overall meeting of service demands in the community. While the current demand on Station 12 is the highest within the Morgan Hill system and can be classified as moderately active, the station's activity is not overly burdensome (i.e. approximately 1,700 calls for service/year or approximately 4.6/day). The activity of the department is projected to increase approximately 12% over the next nine years or at an annual rate of just over 1%/year. An evaluation was conducted of the needed units in the El Toro station given these increasing demands. A mathematical model was constructed taken the known call demand by hour and the known average time commitment per call across the period of a theoretical year. From this a model is constructed given the needed resources to handle the call demands of the system as projected growth and other impacts occur. The chart below illustrates the results of this modeling:

Exhibit 2-4
Needed Units (El Toro Station) Given Projected Call Demand



This exhibit demonstrates that the units at the El Toro Station, required to handle the projected call demand will not exceed a single staffed unit (y-axis represents minimum number of needed units) until the period of 2015 - 2020. It is projected that the call demand by 2010 will present a moderately high utilization rate during some hours of the day. In pure mathematical terms, when the call volume for the El Toro Station approaches 2,600 – 2,800 calls/year, an additional resource should be implemented on the basis of call demand alone.

Existing Community Response Standards

The current system does provide Truck Services through a mechanism of cross staffing apparatus at the El Toro Station. As such, when the Engine assigned to this station is out of quarters or otherwise committed, Truck Company Services must be obtained from other Fire Stations within the Santa Clara County Fire Department system.

This system has been implemented effectively by the Fire Department as evidenced by the fact that there has not been documented incidents wherein the absence of a staffed truck company has had any impact on fire suppression operations. The current apparatus that is assigned to the El Toro Station as "Truck 12" is a 1992 Pierce. It can be reasonably anticipated that the normal life of this equipment will expire in approximately 2005. The current cost of replacement of this type of apparatus is approximately \$575,000 - \$650,000.

As the current contract for services expires in 2005, the replacement of this type of apparatus is a unfunded risk on the part of the Santa Clara County Fire Department. The risk factor would and will be present under any contract provider. The City of Morgan Hill can guarantee the presence of an aerial device and related salvage, ventilation and rescue capacity by specifying the presence of a truck type company within the City. While the specific implementation is most appropriately left to the purveyor of services, one potential scenario involves the utilization of a combination pumper and truck company at Station 12. The reduction in call volume facilitated by the construction of a new center city station will reduce the maintenance and increase the life expectancy of such a unit. This type of "Quint" unit has higher maintenance and replacement costs, but the ability of the system to deliver an aerial device on a first alarm structure response would be enhanced.

The table below represents the difference in amortized cost on an individualized year basis between a standard engine and a quint or truck company described above:

Exhibit 2-5
Amortized Yearly Cost Differential of Engine and Quint

Type of Unit	Estimated Current Cost	Estimated Replacement Cost	Useful Life	Amortized Cost/Year
Engine	\$230,000	\$285,000	10 Years	\$28,500
Quint/Truck	\$625,000	\$751,000	10 Years	\$75,100
Annual Differential				\$46,600

The City will re-invest in Fire Station facility infra-structure

As mentioned earlier in this report, one of the features of the original contract with the Santa Clara County Fire Department transferred ownership of the City's two fire stations to the Fire District in exchange for credits to the contract charges over the first several years of the contract. This provided the substantial benefit to the City of reducing the cash flow impact of the fire services contracts. It also left the City with a substantial lack of flexibility in their fire service provision options as the rather substantial capital investment represented by fire stations within the City belonged to parties other than the City of Morgan Hill itself (i.e. the Santa Clara County Fire Department now owns two stations and CDF owns and operates the third).

In the event of a re-organization each agency may rightly find that the fire station facilities are required to serve other areas for which they have responsibility, thus forcing the City to make a major capital investment in new, quite possibly redundant, and certainly expensive facilities if it should desire to develop other options of service delivery. As mentioned earlier, the opportunity for this type of development will likely manifest itself in two ways: the remodel and/or relocation of the El Toro Station and the development of a separate facility in the center area of the City.

As illustrated in the discussion of growth impacts, the transportation infrastructure within the City is planned and projected to be at a "Level of Service D+" with many intersections planned at "Level D."¹⁸ As citizen perceptions of service levels are largely based upon response time performance, the resource deployment plan of the City of Morgan Hill should have as a very high priority, mechanisms that provide for a guarantee of response time performance that is enhanced, or at the very least, maintained.

An analysis was conducted of the impacts of creating a new fire station facility in the “center city” area. Station locations were modeled at the intersection of Butterfield and Dunne and in the area of 900 East Main Street. Pages 132 and 133 in Appendix “A” provide graphic representations of the modeling efforts.

Impacts of New Station located near Butterfield and Dunne

As can be seen from these graphics, there is a large percentage of overall call demand that occurs along the “Monterey Road corridor”. A station located in the area of Dunne and Butterfield would both redistribute the call load – reducing the 60% call demand upon the El Toro station, as well as provide enhanced response time to approximately 30% of the systems present call for services. An additional advantage of a Station at this location would be the ability of this station to conduct pre-incident planning, fire inspection, hydrant maintenance and public education activities in the southern area of the city that is currently served on an operational basis by South County Fire and by the Dunne Hill Station for the ancillary services noted above. It is estimated that overall system response times would be improved by approximately 37% as a greater number of calls would be within a reduced travel time of a fire station, and there would be a decrease in delayed responses caused by engines out of their districts providing ancillary services to the southern end of the City.

Impacts of new station located near 900 East Main

The addition of a new station located in the vicinity of 900 East Main would provide excellent geographic coverage of the City of Morgan Hill. A new station located in this vicinity would provide enhanced response times to the northwestern area of the city – which has the longest initial response times found within the current system. As Page 132 in Appendix “A” illustrates, there is a very light demand for services in this area currently. When potential development and possible annexations are considered, the impacts on projected call demand remain relatively unchanged.

¹⁸ Level of Service D is defined as “unstable flow. Tolerable speeds can be maintained but temporary restrictions cause excessive delays. Speeds may decline to as low as 40% of free flow speeds.

Moving this station location farther north also removes the 22%+ calls currently experienced within the Monterey Corridor from this station's first in response area (i.e. closest station by response time) and leaves the current southerly response area of the El Toro Station intact. Therefore, there is no measurable enhancement in performance as evaluated by current service demands.

Discussion

The addition of a new center city station in the vicinity of Dunne and Butterfield presents several advantages to the City of Morgan Hill. As discussed above, initial response times will be enhanced by approximately 37%. The workload on Station 12 will be reduced and fall into proportion with the workloads of the other stations. The presence of a station closer to the south end of the City provides an opportunity to more evenly divide the workload of related ancillary services such as inspections, hydrant maintenance and pre-incident planning. A station in this location provides four people on the scene of a structure fire within 8 minutes nearly all streets within the City. The addition of a station at 3-person staffing (with the enhancement of staffing levels at South County to a minimum of 3 people) meets all of the performance criteria identified in this report while limiting on-going operational expense.

The disadvantages of this proposal are limited to the capital cost of land acquisition and development of a new facility. It is estimated that the construction costs will approximate \$2.5 million (2001 dollars). This is somewhat mitigated by the fact that that City has collected a substantial amount of money in development impact mitigation fees for this purpose.

Sources of Revenue Required

The current contract for services mechanism has resulted in an exchange of capital assets (in the form of fire stations) being provided to Santa Clara County Fire as an offset to payments for fire protection services during the early years of the transition. This has resulted in a significant "barrier to entry" for any other entity (including the City of Morgan Hill itself) from entering into a competition to provide these services. The current agreement does have a "buy back" provision with respect to the existing assets of

the system, however, even with this mechanism the costs associated with such an action represent a substantial barrier. In an effort to alleviate this situation, and provide the City of Morgan Hill with an additional level of security, it is recommended that the City re-invest in it's fire station and apparatus infrastructure over the planning horizon.

In order to accomplish this, it is essential that the current funding mechanisms for fire station development and fire service impact be maintained and updated as necessary.

The City should identify specific performance measures for fire protection and EMS services.

An essential element for any evaluating performance is the establishment of goals and/or objectives. Currently the fire defense and EMS system in the City of Morgan Hill does not have any formal performance objectives tied to it.

There is a broad discussion of performance measures found on pages 45 – 46 of this report. In summary, the recommended performance measures for the Morgan Hill system are as follows:

Response Based Performance

- RB-1: Provide a total travel time of 5-minutes and a Total Response Time of 7 minutes to 90% of all emergency responses**
- RB-2: Provide a minimum of 4-people on the scene of interior structure fires within a travel time of 8 minutes 80% of the time and within 10 minutes 95% of the time.**
- RB-3: Provide sufficient staffing and pumping capacity to meet the theoretical fire flow of a structure fire within an average response time of 15 minutes.**

System Based Performance

Fire Suppression Operations

- SB-1: Contain Fire to the room or area found upon arrival of fire suppression units 90% of the time.**
- SB-2: Limit the number of firefighter injuries to less than .47/100 calls for service.**

Fire Prevention/Loss Management

- SB-3: Limit the number of Commercial Fires per year to 5/1,000 Inspectable Occupancies**

Emergency Medical Services

- SB-4: Obtain Return of Spontaneous Circulation in 8% of non-traumatic, cardiac arrest patients experienced in the field.**
- SB-5: 90% of all applicable Trauma Patients arrive at an appropriate Trauma Center within 50 minutes of dispatch.**
- SB-6: 65% of all applicable EMS calls receive appropriate bystander intervention prior to arrival of public safety personnel.**

Customer Service and Satisfaction

- SB-7: Receive 95% Good or Excellent rating in Responses to solicited Customer feedback.**

A well defined program of Continuous Quality Improvement should be adopted for the system as well. Critical components of this system should include:

1. Statistical Process Control to identified system variations and management priorities.
2. Peer Review Process Analysis
3. Targeted audits of system components including code construction and enforcement application, public education efforts, data collection and Management Information Systems, and tasking distribution within the system.
4. Incident Review and Analysis

The City fire defense and EMS system will rely to an increasing extent on citizen involvement and self-help.

An increasing investment in activities related to appropriate citizen intervention will be necessary to provide meaningful improvement to community safety and wellness. There are multiple studies that indicate the effectiveness of CPR and other life saving techniques are directly related to the time between the onset of the event and the

introduction of CPR and/or defibrillation. The only meaningful way to introduce these type of techniques is to have them applied by citizen bystanders

The same is true for disaster mitigation and activities related to fire discovery and suppression as well. Specifically, the challenges facing the City of Morgan Hill in their hillside, wildland interface areas will require specific strategies focused on activities and actions by the citizens in those areas to mitigate the hazards specific to those wildland interface areas.

For this reason, the Task Force strongly recommends that these types of direct citizen involvement opportunities be maximized within the new Fire Defense and EMS system. While historically, “public education” activities, as they have been known, have been an ancillary service to the primary functions of fire suppression and rescue – a fundamental shift in philosophy is now required. Pro-active citizen involvement at all stages of public safety concerns is crucial now, and its importance will only grow. Only through active public involvement can true efficiencies be achieved in public safety expenditures and true increases in effectiveness be obtained.

Specific programs and activities recommended for adoption include:

1. Consider the formation of special districts or other revenue enhancement mechanisms for areas of special risk (i.e. High Hazard Wildland Interface areas, areas of public assembly, etc.)
2. Development of residential educational, enforcement and assistance programs for fire safety and wellness programs.
3. Conduct a comprehensive evaluation of existing ordinances and enhance the ability to interpret and enforce their provisions effectively.
4. Evaluate the potential impacts and implement as appropriate CPR, Automatic External Defibrillation and other self help activities related to EMS service delivery.

Utilization of Emerging Technology

The influence of technology on all aspects of a community's life is growing. The City of Morgan Hill is at a unique place where it will be worth examining the advantages that technology can deliver to the enhancement of public safety. As of the construction

of this plan, both of the emerging internet behemoths, Microsoft and AOL/Time Warner are seeking to identify ways to deliver content and grow customer base. Many of these initiatives involve, or have as their foundation, the development of “smart homes”, or houses and household devices that are connected in seamless fashion to increase the quality of life of their inhabitants.

The healthcare industry is currently developing standards within the existing technology to enhance medical information usefulness and provide more care in a manner more remote than currently is provided in facilities. An interesting confluence of events and technological developments may place Morgan Hill in a position to develop opportunities for early warning and notification of fires and medical emergencies through the existing media, which may include cable television, phone wire and/or wireless solutions.

The ability to provide interconnectivity between smoke detectors and these pathways to the community could provide tremendous increases in early warning detection and enhance response times. Likewise, developing low-output wireless technology can provide for interconnectivity of small medical devices such as implantable pacemakers and other monitoring equipment that could provide not only early warning but immediate 2-way communication with medical professionals.

Morgan Hills unique position near the heart of the Silicon Valley combined with it's size, may provide a unique position to implement some of the early phases on this technology having dramatic impacts on the quality of life of its residents at a minimal government cost.

The City should ensure that research, development and evaluation of the utilization of these technologies are incentivized in their existing relationship with their provider and memorialized in any future contract for service that is established.

Financial Implications

It is projected that this increased focus on citizen self-help and interdiction will require the addition of human and capital resources. The Santa Clara County Fire Department estimates that 1.5 FTE's are utilized to accomplish the necessary fire

prevention tasks associated with providing service to the City of Morgan Hill. This includes existing public education efforts. An analysis of the current task loading of the fire prevention staff reveals that current task loading results in approximately 3.68 tasks/work day. These tasks involve a wide spectrum of time commitments from 4 hour hazardous material inspections to cursory secondary plan reviews that take very little time (a breakdown of reported activities can be found on Page 44). Given 1.5 FTE's this equates to 2.4 tasks/FTE/day over a year long period.

It is important to note that inspection fees for hazardous materials management are returned directly to the City. Therefore a portion of the costs associated with these tasks are offset from the remainder of the demand. As such, these fees cannot be credited with offsetting the demand created by this service as they would if they were retained by the agency conducting the inspection. Notwithstanding this dimension, the average task time for fire prevention activities of 3.3 hours (over the period of a year) appears to leave some room for absorption of these type of responsibilities within the existing cost structure. While there will likely be some skills differential between the skills set of the existing work force and the skills needed to fulfill the goals articulated on pages 95 - 96, it is projected that given the size and scope of any regional agency ultimately providing service to the City, this capacity expansion should be attained with the addition of no more than an additional 0.5 FTE during at least the first 5 years of the planning horizon.

Additional investments will be required in office support and infrastructure as well as initial program development and evaluation mechanisms. The costs of facilities have been included in the projections for both the remodel/expansion of El Toro and the potential additional station in the center city area.

The exhibit below summarizes the projected costs in current dollars for the needed enhancements to support this focus:

Exhibit 2-6
Projected Costs Associated with Citizen self-help and Interdiction

Investment Description	Estimated Annual Cost
0.5 Deputy Fire Marshal Equivalent	\$48,500
Staff Support	\$15,500
Operational Costs/Program Development	\$15,000
ESTIMATED COST ANNUAL COSTS	\$79,000.00

The City will continue and enhance it's Emergency Management Planning activities in a manner consistent with enhanced citizen involvement and self help

The City of Morgan Hill is located near active seismic areas. The functions of Emergency Management and Community Emergency Response Planning are not specifically addressed in the existing contract for services.

While these services are traditionally best provided on a regional basis as the wide scope provided by regional approaches provides opportunities for larger media utilization to broader populations. However, the relative isolation of the South County area, including Morgan Hill generates the need for a more specific planning and response criteria. This function would certainly benefit from enhanced cooperation between South County Agencies, or the provision of these services by a single provider.

The City will continue to provide ALS First Responder Services within it's boundaries.

Recent studies have indicated that community expectations for their emergency medical systems include paramedic response and pre-arrival instructions from dispatchers. Currently, the City of Morgan Hill enjoys both levels of service under contracts with the Santa Clara County Fire Department.

It is projected that this level of service will continue throughout the planning horizon. Several scenarios are forming with respect to the future of Emergency Medical Services. One relatively likely scenario would focus the skills of first responders on advanced airway management and intravenous line (I.V.) administration, with higher level skills which require more repetition and exposure to avoid skill degradation being reserved for specialized, advanced care professionals. This is unlikely to impact the specifics of the Morgan Hill system in that paramedic care is already being provided, and while the level of care described above could be characterized as being more sophisticated than current "Emergency Medical Technician, Basic" training, it is not more advanced than current paramedic skills. Therefore, the costs of maintaining the system

are projected to be lower or equal to today's costs, although the overall cost to the healthcare side of the equation (on a regional basis) will be lower.

The City of Morgan Hill entered into a separate agreement for first responder paramedic services with the Santa Clara County Fire Department in 1998. The current costs of that contract are \$100,000/year and are subject to annual review. It cannot be disputed that paramedic services were not provided by the City of Morgan Hill prior to the assumption of services by the Santa Clara County Fire Department. However, the provision of paramedic level, first responder services have now become a community standard of care. Additionally, upon the implementation of the next ambulance services contract in the County of Santa Clara, agencies that provide paramedic level, first responder services will receive additional compensation on a per engine basis. Therefore, it is recommended that the provision of ALS First Responder Services be included within the base levels of service provided for in future contracts for fire service provision within the City of Morgan Hill. The City should also consider the re-negotiation of the existing supplemental contract to take into consideration the impacts of additional compensation being provided through the county-wide ALS agreement. It is projected that the current supplemental cost of \$100,000 (or \$50,000/ Santa Clara County Fire Department Station) will be greatly reduced as it becomes part of the on-going cost structure of the Fire Department or any successor agency.

The City will continue its reliance on fire protection related codes and ordinances as an integral part of its fire defense system. Adoption and maintenance of sprinkler protection and defensible space ordinances will continue to play an essential role in Morgan Hill's fire defense system

The City of Morgan Hill currently has in place an ordinance requiring the sprinkler protection of buildings under the following conditions:

- All new construction, regardless of floor area or type, except:
 - Group R3 (one and two family dwellings) that are not located in the Hazardous Fire Area and not exceeding 4,500 square feet in total floor area.
 - Group U1 and U2 occupancies.

- All portions of existing non-sprinkler buildings if any one of the following conditions apply:
 - An addition which exceeds 50% of the original permitted square footage of the structure.
 - An alteration or repair which exceeds 50% of the value of the original permitted structure.
 - An addition which exceeds 2,000 square feet
 - Any change in occupancy use.

The practical effect of this is to limit all new development to a needed fire flow of between 1,500 and 2,000 g.p.m.¹⁹ One of the adopted performance objectives deals directly with the ability to deliver fire flow onto an open burning fire within the City. Specifically, objective RB-3 states:

Provide sufficient staffing and pumping capacity to meet the theoretical fire flow of a structure fire within an average overall response time of 15 minutes.

Page F (Appendix) is a graphical representation of the ability of the current system to achieve this objective given 12- person/shift staffing. The results of this modeling indicates that the vast majority of the street segments (>90% within the incorporated boundaries of the City) can receive this level of service if four person staffing is adopted. The results of this modeling when compared to the scenario represented by Option 6 varied very little as the critical path to the maximum response time is presented by the most remote station to any given location in both models.

¹⁹ Actual determination of needed fire flow is the responsibility of the local authority having jurisdiction and there is some discretion relative to credits granted based on type of construction and area separations.

Summary of Master Plan Scenarios and Recommendations

The data presented in the prior sections of this report yields three principal scenarios that should be considered in achieving the performance objectives identified. Each of the options has several components that are common throughout all of them. These common components are identified as follows:

Exhibit 3-1
Master Plan Summary – Common Elements

Priority	Description
1	Cooperative Agreement for integrated dispatch and unit status information for South County units
1	Cooperative Agreement for Battalion Chief level operational supervision or incident command on a 24 hours/day basis.
1	Contract for supplemental staffing at South County Station bringing minimum staffing to 3-people/day
2	Amend sprinkler ordinance bringing minimum residential square footage to 3,000 square feet or greater
2	Re-negotiate secondary ALS Contract for services. Include ALS services within standard services provided.
3	Research and develop potential of cable system and related technology to provide interactive alarms and safety interfaces between Public Safety agencies and homes.
3	Implement Citizen Self-Help/Educational program enhancements.
3	Replacement/Acquisition of Truck/Quint Company at Station 12.

There are three primary options considered in the development of this master plan.

Option “A” is presented as meeting both the operational performance goals identified for the system and well as anticipating and meeting future service and environmental/market demands. Option “A” does not take into account the impacts of potential mandated minimum staffing requirements (i.e. as found in NPFA 1710)

however, response performance measures identified in that standard would be met under the resourcing plan found in Option A.

Option “B” is presented as a plan that meets the minimum performance objectives identified for the system as well as the impacts of potential mandates of NFPA 1710.

Option “C” is presented as a plan that maximizes the utilization of the existing fire station infrastructure while enhancing staffing to provide more flexibility and depth of response to the current system. Response time performance is not enhanced, but greater 2-In/2-Out coverage is provided for those limited number of structure fires that do occur in the City and greater staffing levels are delivered on all incidents.

Option “A” --

The elements of Option “A” are described by the table below:

**Exhibit 3-2
Master Plan Summary – Option A**

Priority	Description
1	Cooperative Agreement for integrated dispatch and unit status information for South County units
1	Cooperative Agreement for Battalion Chief level operational supervision or incident command
1	Contract for supplemental staffing at South County Station bringing minimum staffing to 3-people/day
2	Construction of new “center city” fire station
2	Additional staffing of 3 FTE (9+ people) to staff center city facility.
2	Amend sprinkler ordinance bringing minimum residential square footage to 3,000 square feet or greater
2	Re-negotiate secondary ALS Contract for services. Include ALS services within standard services provided.
3	Research and develop potential of cable system and related technology to provide interactive alarms and safety interfaces between Public Safety agencies and homes.
3	Implement Citizen Self-Help/Educational program enhancements.
3	Replacement/Acquisition of Truck/Quint Company at Station 12.

Option “A” is best described operationally as a system of four fire stations (including South County) staffed with a minimum of 3-Person Companies. A new station is added in the vicinity of Dunne and Butterfield which provides an initial response time improvement of approximately 30%+ in the City because of the large number of incidents that occur within the Monterey Corridor (see discussion on page 92). Additionally, a station in this location provides for the delivery of a 4-Person company within an 8-minute travel time, to in excess of 96% of the street segments in the City. A station located in this area would also provide for the management of non-response

related activities such as inspections and hydrant maintenance in the southern end of the City of Morgan Hill.

Option A also addresses the need for specialized equipment, specifically and aerial device within the City. Currently the City is served by a cross staffed truck company located at the El Toro station. Utilization projections based upon population and density estimates indicate that on a demand basis alone, a second unit in the El Toro station will not become necessary until the secondary planning horizon (i.e. 2015 – 2020). The sprinkler requirements in the City mitigate to a great extent the need for Truck services, however, given the large scale industrial development, and the long response times for other, similar equipment, it is desirable to have an aerial device available to the City. Option A recommends replacing the Engine in El Toro with a Quint (or combination Truck and Engine) to provide the availability of this type of resource while maintaining staffing levels. This in essence, provides a cross staffed truck company on a first in basis. As vehicle replacement costs are part of the existing contract, it is estimated that the difference in amortization expense between a standard engine and this type of equipment is approximately \$46,600/year. This approach also alleviates the obvious concern of any service contract holder related to the risk of purchasing a very expensive truck company to serve in a reserve and un-staffed capacity with a life expectancy beyond the life of any contract.

Projected Implementation Actions and Costs – Option A

**Exhibit 3-3
Estimated Current Dollar Costs of Implementation –Option A**

Projected Date	Description	Estimated Cost Impact ²⁰
	Cooperative Agreement for integrated dispatch and unit status information for South County units	
	Cooperative Agreement for Battalion Chief level operational supervision or incident command	
	Contract for supplemental staffing at South County Station bringing minimum staffing to 3-people/day	\$ 270,000
	Construction of new “center city” fire station	\$ 2,500,000 (Capital)
	Additional staffing of 3 FTE (9 people) to staff center city facility.	\$ 1,107,000
	Amend sprinkler ordinance bringing minimum residential square footage to 3,000 square feet or greater	
	Eliminate secondary ALS Contract for services. Include ALS services within standard services provided.	(\$ 100,000)
	Research and develop potential of cable system and related technology to provide interactive alarms and safety interfaces between Public Safety agencies and homes.	\$ 79,000
	Implement Citizen Self-Help/Educational program enhancements.	\$ 79,000 ²¹
	Replacement of Engine 12 w/ Truck/Quint. Increased Amortization Expense	\$ 46,600
Total Operational		\$1,481,600
Total Capital		\$2,500,000

Spreadsheet “Option A” in Appendix “B” provides estimated costs over the life of the planning horizon for the implementation of this option.

²⁰ Current Dollars

²¹ This costs represents only the initial cost of program development and community needs assessment. It is likely that the ultimate operational cost(s) of this approach will be greater than the \$79,000 indicated here.

Option B-

The elements of Option “B” are described by the table below:

**Exhibit 3-4
Master Plan Summary – Option B**

Priority	Description
1	Cooperative Agreement for integrated dispatch and unit status information for South County units
1	Cooperative Agreement for Battalion Chief level operational supervision or incident command
1	Contract for supplemental staffing at South County Station bringing minimum staffing to 3-people/day
2	Supplement Staffing at Station 12 to minimum of 4 people.
2	Construction of new “center city” fire station
2	Additional staffing of 4 FTE (12+ people) to staff center city facility.
2	Amend sprinkler ordinance bringing minimum residential square footage to 3,000 square feet or greater
2	Eliminate secondary ALS Contract for services. Include ALS services within standard services provided.
2	Supplement Staffing at Station 13 to minimum of 4 people.
3	Eliminate contract for supplemental staffing with South County Fire if conditions required mandated staffing levels impacting both agencies. ²²
3	Research and develop potential of cable system and related technology to provide interactive alarms and safety interfaces between Public Safety agencies and homes.
3	Implement Citizen Self-Help/Educational program enhancements.
3	Replacement/Acquisition of Truck/Quint Company at Station 12.

Option “B” is described as a scenario plan that resources a system that would meet the planning guidelines as well as the possible projected staffing mandates of either

²² It is assumed that a mandate on minimum staffing would apply to South County Fire as well. Therefore, Morgan Hill should not contract for service levels that are mandated in the absence of the contract for service.

NFPA Standard 1710 or OSHAL guidelines. Option B plans for the addition of a center city station and staffing levels of 4 person/company in all areas of the City. All other aspects of Option A remain in effect (see discussion on page 106).

Projected Implementation Actions and Costs – Option B

Exhibit 3-5

Estimated Current Dollar Costs of Implementation –Option B

Projected Date	Description	Estimated Cost Impact ²³
	Cooperative Agreement for integrated dispatch and unit status information for South County units	
	Cooperative Agreement for Battalion Chief level operational supervision or incident command	
	Contract for supplemental staffing at South County Station bringing minimum staffing to 4-people/day	\$ 270,000
	Supplement Staffing at Station 12 to 4 people/shift	\$ 347,686
	Construction of new “center city” fire station	\$ 2,500,000 (Capital)
	Additional staffing of 4 FTE (12+ people) to staff center city facility.	\$ 1,454,000
	Amend sprinkler ordinance bringing minimum residential square footage to 3,000 square feet or greater	
	Supplement Staffing at Station 13 to a minimum of 4 people/shift	\$ 347,686
	Re-negotiate secondary ALS Contract for services. Include ALS services within standard services provided.	(\$ 100,000)
	Re-negotiate Supplemental Staffing Contract with South County.	(\$ 270,000)
	Research and develop potential of cable system and related technology to provide interactive alarms and safety interfaces between Public Safety agencies and homes.	\$ 79,000
	Implement Citizen Self-Help/Educational program enhancements.	\$ 79,000
	Replacement of Engine 12 w/	\$ 46,600

²³ Current Dollars

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	Truck/Quint. Increased Amortization Expense	
Total Operational		\$2,253,972
Total Capital		\$2,500,000

Spreadsheet “Option B” in Appendix “B” provides estimated costs over the life of the planning horizon for the implementation of this option.

Option C-

The elements of Option “C” are described by the table below:

Exhibit 3-6
Master Plan Summary – Option C

Priority	Description
1	Cooperative Agreement for integrated dispatch and unit status information for South County units
1	Cooperative Agreement for Battalion Chief level operational supervision or incident command
1	Contract for supplemental staffing at South County Station bringing minimum staffing to 4-people/day
2	Supplement Staffing at Station 12 to minimum of 4 people.
2	Amend sprinkler ordinance bringing minimum residential square footage to 3,000 square feet or greater
2	Re-negotiate secondary ALS Contract for services. Include ALS services within standard services provided.
3	Supplement Staffing at Station 13 to minimum of 4 people.
3	Eliminate contract for supplemental staffing with South County Fire ²⁴
3	Research and develop potential of cable system and related technology to provide interactive alarms and safety interfaces between Public Safety agencies and homes.
3	Implement Citizen Self-Help/Educational program enhancements.
3	Replacement/Acquisition of Truck/Quint Company at Station 12.

Option “C” is described as a scenario plan that utilizes existing system resources, specifically stations and apparatus and merely enhances staffing to a minimum of a 4 – person crew.

²⁴ It is assumed that a mandate on minimum staffing would apply to South County Fire as well. Therefore, Morgan Hill should not contract for service levels that are mandated in the absence of the contract for service.

Projected Implementation Actions and Costs – Option C

Exhibit 3-7

Estimated Current Dollar Costs of Implementation –Option C

Projected Date	Description	Estimated Cost Impact ²⁵
	Cooperative Agreement for integrated dispatch and unit status information for South County units	
	Cooperative Agreement for Battalion Chief level operational supervision or incident command	
	Contract for supplemental staffing at South County Station bringing minimum staffing to 4-people/day	\$ 540,000 ²⁶
	Supplement Staffing at Station 12 to 4 people/shift	\$ 347,686
	Amend sprinkler ordinance bringing minimum residential square footage to 3,000 square feet or greater	
	Supplement Staffing at Station 13 to a minimum of 4 people/shift	\$ 347,686
	Re-negotiate secondary ALS Contract for services. Include ALS services within standard services provided.	(\$ 100,000)
	Research and develop potential of cable system and related technology to provide interactive alarms and safety interfaces between Public Safety agencies and homes.	\$ 79,000
	Implement Citizen Self-Help/Educational program enhancements.	\$ 79,000
	Replacement of Engine 12 w/ Truck/Quint. Increased Amortization Expense	\$ 46,600
Total Operational		\$1,339,972
Total Capital		\$ 0

Spreadsheet “Option B” in Appendix “B” provides estimated costs over the life of the planning horizon for the implementation of this option.

²⁵ Current Dollars

²⁶ In Option “B” it is assumed that the cost of supplementing the South County personnel would be eliminated based upon “mandatory” staffing levels of 4 people/company. In Option “C” this cost (\$540,000/year) is maintained as there is no assumed mandatory staffing levels. If the assumption in Option “B” is removed, the cost delta between Option “B” and Option “C” is \$540,000 less (not adjusted for inflation).

Fire and EMS Task Force Recommendations

The Fire and EMS Master Plan Update Task Force met approximately 10 times during the development of this plan. At least 2 meetings were held for the express purpose of taking public input into the planning document.

After reviewing available data and information provided by the consultant and obtained independently by Task Force members, the Task Force obtained consensus on the following recommendations:

- A. The City of Morgan Hill should adopt the performance goals identified within this report as the performance goals for Fire and EMS services within the City.
- B. The City should adopt "Option A" as presented within this report as the mechanism for achieving the performance goals identified.
- C. The various programs and plans contained in "Option A" should be adopted as part of any new service contract and several of the issues should be part of an attempted re-negotiation of existing service contract(s) with the Santa Clara County Fire Department.
- D. The City should understand that some of the cost estimates, specifically those related to the Citizen Self Help approaches to community safety, state only the start-up costs estimated to provide for a more thorough evaluation of the needs and strategies involved in implementing such an approach. The Task Force believes that the ultimate operational costs of such efforts are not adequately reflected in the costs estimates in this plan.
- F. The City should continue to collect Fire Services Development Impact fees for construction of needed new facilities and re-investment in fire station ownership.

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It is conceivable that during the planning horizon a fourth, city-owned facility may become necessary to maintain service levels.

Appendix “A” – Maps and Modeling Exhibits

Appendix "B" – Financial Impacts of System Design Options

OPTION "A" – FINANCIAL IMPACTS OVER PLANNING HORIZON

Year	Projected Operational Expenditure	2001 NPV	Projected Inflation Value	Year Sub-Total	Contract Cost	Non-Adjusted Cost	Cost Delta Given Year
2001	Supplement Staffing at South County Fire Station to 3-person minimum	\$270,000	\$270,000				
2001				\$270,000	\$3,691,475	\$3,421,273	\$270,202
2002	Implementation of Citizen Self-help program support	\$79,000	\$82,713				
2002	Re-negotiate separate ALS Contract	(\$100,000)	(\$100,000)				
2002				(\$36,185)	\$3,802,949	\$3,558,124	\$244,824

Year	Projected Operational Expenditure	2001 NPV	Projected Inflation Value	Year Sub-Total	Contract Cost	Non-Adjusted Cost	Cost Delta Given Year
2004	Staffing for Center City Fire Station	\$1,107,000	\$1,295,033				
2004	Research and Development of Broadband Public Safety Initiative	\$60,950	\$71,303				
2004				\$1,366,336	\$5,321,403	\$3,700,449	\$1,620,954
2005	Replacement of Engine 12 w/ Quint - Increase in Amortization	\$46,600	\$46,600				
2005				\$46,600	\$5,580,859	\$3,848,467	\$1,732,392

Option "A" Capital Costs over Planning Horizon

Year	Projected Capital Expenses	2001 NPV	Projected Inflation Value	Year SubTotal
2003	Construction of new "center city" station ¹²	\$2,500,000	\$2,812,160	\$2,812,160

¹² Cost estimates are for design/build only. Land acquisition costs are not included.

OPTION "B" – FINANCIAL IMPACTS OVER PLANNING HORIZON

Year	Projected Operational Expenditure	2001 NPV	Projected Inflation Value	Year Sub-Total	Contract Cost	Non-Adjusted Cost	Cost Delta Given Year
2001	Supplement Staffing at South County Fire Station to 3-person minimum	\$270,000	\$270,000				
2001				\$110,000	\$3,691,475	\$3,421,273	\$270,202
2002	Supplement Existing Staffing to 4 person companies at Stations 12	\$347,686	\$364,027				
2002	Implementation of Citizen Self-help program support	\$79,000	\$82,713				
2002	Re-negotiate separate ALS Contract	(\$100,000)	-\$100,000				
2002				\$327,842	\$4,166,976	\$3,558,124	\$608,852

Year	Projected Operational Expenditure	2001 NPV	Projected Inflation Value	Year Sub-Total	Contract Cost	Non-Adjusted Cost	Cost Delta Given Year
2003	Supplement existing staffing to 4 person at Station 13	\$347,686	\$393,732				
2003	Eliminate South County Supplemental Staffing Contract	(\$270,000)	(\$305,758)				
2003				\$87,974	\$4,421,630	\$3,700,449	\$721,180
2004	Staffing for Center City Fire Station (Four Person)	\$1,454,000	\$1,700,974				
2004	Research and Development of Broadband Public Safety Initiative	\$60,950	\$71,303				
2004				\$1,772,277	\$4,598,494.69	\$3,848,467	\$750,027

Year	Projected Operational Expenditure	2001 NPV	Projected Inflation Value	Year Sub-Total	Contract Cost	Non-Adjusted Cost	Cost Delta Given Year
2005	Replacement of Engine 12 w/ Quint - Increase in Amortization	\$46,600	\$46,600				
2005				\$46,600	\$4,829,034.47	\$4,002,406.02	\$826,628

Option "B" Capital Costs Over Planning Horizon

Year	Projected Capital Expenses	2001 NPV	Projected Inflation Value	Year SubTotal
2003	Construction of new "center city" station ¹³	\$2,500,000	\$2,812,160	\$1,546,688

¹³ Cost estimates are for design/build only. Land acquisition costs are not included

OPTION "C" – FINANCIAL IMPACTS OVER PLANNING HORIZON

Year	Projected Operational Expenditure	2001 NPV	Projected Inflation Value	Year Sub-Total	Contract Cost	Non-Adjusted Cost	Cost Delta Given Year
2001	Supplement Staffing at South County Fire Station to 4-person minimum	\$540,000	\$540,000				
2001				\$540,000	\$3,961,475	\$3,421,273	\$540,202
2002	Supplement Existing Staffing to 4 person companies at Stations 12	\$347,686	\$364,027				
2002	Implementation of Citizen Self-help program support	\$79,000	\$82,713				
2002	Re-negotiate separate ALS Contract	(\$100,000)	-\$100,000				
2002				\$327,842	\$4,447,776	\$3,558,124	\$889,652

Year	Projected Operational Expenditure	2001 NPV	Projected Inflation Value	Year Sub-Total	Contract Cost	Non-Adjusted Cost	Cost Delta Given Year
2003	Supplement existing staffing to 4 person at Station 13	\$347,686	\$393,732				
2003				\$393,732	\$5,019,419	\$3,700,449	\$1,318,970
2004	Research and Development of Broadband Public Safety Initiative	\$60,950	\$71,303				
2004				\$71,303	\$5,291,498	\$3,848,467	\$1,443,031
2005	Replacement of Engine 12 w/ Quint - Increase in Amortization	\$46,600	\$46,600				
2005				\$46,600	\$5,549,758	\$4,002,406	\$1,547,353

Appendix "C" – Comparison of Implementation Steps to Performance Objectives

Exhibit 3-8

Comparison of Performance Objectives to System Enhancements

	RB-1	RB-2	RB-3	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7	
Cooperative Agreement for integrated dispatch and unit status information for South County units	•	•	•	•			•	•		•	
Cooperative Agreement for Battalion Chief level operational supervision or incident command			•	•	•						
Contract for supplemental staffing at South County Station bringing minimum staffing to 3-people/day		•	•	•	•		•	•			
Amend sprinkler ordinance bringing minimum residential square footage to 3,000 square feet or greater			•	•	•						
Supplement existing staffing at El Toro (Station 12) to 4-people/day.		•	•	•	•			•			
Eliminate secondary ALS Contract for services. Include ALS services within standard services provided.											

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	RB-1	RB-2	RB-3	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7		
Research and develop potential of cable system and related technology to provide interactive alarms and safety interfaces between Public Safety agencies and homes.	•			•			•		•			
Implement Citizen Self-Help/Educational program enhancements.				•		•	•	•	•	•		
Supplement existing staffing at El Toro (Station 13) to 4-people/day.		•	•	•	•		•	•				
Construction of new "center city" fire station	•	•	•	•			•	•				
Additional staffing of 1 FTE (3 people) to staff center city facility.	•	•	•	•			•	•				
Remodeling/Expansion of Fire Station 12	•	•		•			•					
Replacement/Acquisition of Truck Company at Station 12.	•	•	•									
Additional staffing for additional Truck Company.	•	•	•									

- RB-1: Provide a total travel time of 5-minutes and a Total Response Time of 7 minutes to 90% of all emergency responses
- RB-2: Provide a minimum of 4-people on the scene of interior structure fires within 8 minutes travel time 80% of the time and within 10 minutes 95% of the time.
- RB-3: Provide sufficient staffing and pumping capacity to meet the theoretical fire flow of a structure fire within an average response time of 15 minutes.
- SB-1: Contain Fire to the Room or area of origin 90% of the time.
- SB-2: Limit the number of firefighter injuries to less than 47/100 calls for service.
- SB-3: Limit the number of Commercial Fires per year to 5/1,000 Inspectable Occupancies
- SB-4: Obtain Return of Spontaneous Circulation in 8% of non-traumatic, cardiac arrest patients experienced in the field.
- SB-5: 90% of all applicable Trauma Patients arrive at a Level II Trauma Center within 50 minutes of dispatch.
- SB-6: 65% of all applicable EMS calls receive appropriate by-stander intervention prior to arrival of public safety personnel.
- SB-7: Receive 95% Good or Excellent rating in Responses to solicited Customer feedback.

Appendix “D” - Definitions and Terms

Communication Infrastructure -	Refers to the equipment and processes necessary to receive and process a call for assistance, to dispatch appropriate equipment and the provision of communication links that provide for emergency scene operations and safety.
Fire Flow-	The theoretical amount of water, measured in gallons per minute, necessary to extinguish a fire in a building. It is based upon type of construction, use, area separations and separation of buildings.
Fire Loading -	The amount of combustibles placed within a building measured in British Thermal Units (BTU).
Flash over -	The point in time at which flammable products of combustion of a confined structure fire reach their ignition temperature and fall within their explosive range resulting in rapid burning throughout the area of gas impingement.
NFPA 1710 -	Refers to a consensus standard under consideration by the National Fire Protection Association that would outline minimum staffing and response time requirements for fire departments.

Response Time -

For purposes of this plan, response time is the cumulative time segments that approximate the time from the receipt of a 911 call until the arrival of a fire apparatus or unit. Response Time is typically comprised of call processing time, dispatch time, turnout time, and travel time.

Travel Time -

The time segment of the response time interval that is measured from the time the fire apparatus “responds” (i.e. rolls a wheel in response to a call for service) until that unit arrives at the scene of a call for service.

Appendix “E” - Comparison of Planning Options with Study Mean

The following table presents a summary of various service level indicators of a large comparison group (n = 37) California cities.

EXHIBIT 4-1

COMPARISON MATRIX OF VARIOUS SERVICE LEVEL INDICATORS²⁷

	Study	MH	Option A	Option B	Option C
Stations/Sq. Mile	0.13	0.25	0.33	0.33	0.25
Sq. Mile/Station	7.33	4.00	3.00	3.00	4.00
Eng./Square Mile	0.13	0.25	0.33	0.33	0.25
Trucks/Sq. Mile ²⁸	0.02	0.03	0.03	0.03	0.03
FF/1K Pop	0.76	0.71	1.11	1.42	1.11
Total calls/station	1298.86	742.67	775.00	775.00	1033.33
FF/Sq. Mile	1.71	2.00	3.50	4.50	3.50
FF/Call	0.0105	0.0108	0.0135	0.0174	0.0135

As there are many “high growth” cities in California during the study period, another, more focused sample of cities was solicited utilizing relatively high build out as a criteria for selection. A total of eight cities were selected with minimal open space and/or external grown potential. The table below summarizes service level indicators in Morgan Hill with this more specific study population:

²⁷ Options A, B and C are presented at estimated end of planning horizon

²⁸ Assumes variable partial credit for Truck/Quint in Options A, B and C

Comparison with High Percentage of Build out/Little Open space Cities

	Study Limited Growth	Morgan Hill	Option A	Option B	Option C
Stations/Sq. Mile	0.27	0.25	0.33	0.33	0.25
Sq. Mile/Station	3.75	4.00	3.00	3.00	4.00
Eng./Square Mile	0.27	0.25	0.29	0.29	0.29
Trucks/Sq. Mile	0.07	0.03	0.04	0.04	0.04
FF/1K Pop	0.75	0.71	1.11	1.42	1.11
Total calls/station	1654.45	742.67	775.00	775.00	1033.33
FF/Sq. Mile	4.27	2.00	3.50	4.50	3.50
FF/Call	0.01	0.01	0.0135	0.0174	0.0135

The tables above reflect the fact that cities/jurisdictions that have limited external growth opportunities have approximately double the “Stations/Square mile” and half the “Square miles covered per Station”. The metric of “Firefighters/1,000 Population” remains relatively constant between the two populations, while the demand for services, as measured by “Total Calls/Station” increases approximately 33% between the two groups. Cities that have approached build out also have almost triple the level of Truck Company coverage as Cities in the more general population.

The demand for services as measured by “Total Calls/Station” for Morgan Hill remains low in any given scenario. The staffing levels proposed in the options will place Morgan Hill 48% above the study population. However, the population under consideration has not addressed the potential issues of NFPA 1710 which are at least partially anticipated in some of the options presented. Notwithstanding the dimensions listed in this paragraph, the implementation elements of the plan as proposed are within the range of service level measures found among cities with similar build-out potentials